

Attachment B

PATENT  
Docket No. 315.0001 0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): JANSSEN, Terrance E.	)	Group Art Unit:	3753
	)		
Serial No.: 10/721,698	)	Examiner:	JOHN K. FORD
Confirmation No.: 6282	)		
	)		
Filed: November 25, 2003	)		
	)		

For: HEAT EXCHANGE APPARATUS, SYSTEM AND METHODS REGARDING  
SAME

DECLARATION UNDER 37 CFR 1.132 OF TERRANCE E. JANSSEN  
REGARDING SECONDARY CONSIDERATION OF COPYING

Commissioner for Patents  
Mail Stop Amendment  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Purpose of Declaration

This declaration is to set forth evidence of copying by others for evaluation in the determination of non-obviousness of the claims pending in the above-identified application.

I, Terrance E. Janssen, state the following:

1. The claimed invention pending in the above-identified application was conceived in the United States prior to 31 January 2002.
2. Attached as Exhibit A to this declaration is a final design drawing completed in December 2001 using the office AutoCAD with the assistance of employee, Brian Urlaub. The drawing as clearly labeled in Exhibit A shows a "GFX Double Walled Heat Exchanger" inserted

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in a "City Water Main." As one skilled in the art recognizes, a city water main is a conduit that operates in a flooded state. As further shown in Exhibit A, the system includes "Geothermal Heat Pump(s)" that form a "Closed Loop" with the "GFX Double Walled Heat Exchanger" inserted in a "City Water Main." Exhibit A further shows an "Insulated Vault with Lockable Cover" enclosing the "GFX Double Walled Heat Exchanger" inserted in a "City Water Main." Further, Exhibit A shows a "Contaminate Monitor Alarm and Shut Down Switch" in the "Closed Loop Line Under Ground" as well as a "Flow Meter."

3. Attached as Exhibit B is a home page of a website advertising trademarked "GFX" heat exchangers; the page is used to provide definition to the term "GFX Double Walled Heat Exchanger" which occurs as a label on Exhibit A. As shown therein, and as described in U.S. Patent No. 4,619,311 issued 28 October 1986 and referenced on the home page (hereinafter GFX Patent), a "GFX" type heat exchanger (which was a trademarked product that was described in the art and available prior to 31 January 2002) includes an inner waste pipe that carries waste water from sources such as bathtubs, shower stalls, etc. in a gravity flow type of situation. An outer pipe is provided that contains cold water to be heated by the gravity flow of fluid in the inner waste pipe. A co-inventor of the GFX patent is Carmine Vasile.

4. From January 7, 2002, I had numerous telephone conversations with John Lebo regarding manufacturing that portion of the invention that can be inserted into a water main according to the present invention and as shown in Exhibit A. Attached hereto as Exhibit C is a copy of an e-mail dated June 28, 2002 to John Lebo who is the president of Doucette Manufacturing setting forth cost of manufacturing a part that is inserted into the municipal water main. This e-mail included a copy of a drawing similar to that shown in Exhibit A.

5. The e-mail described in paragraph 4 herein was also sent to Carmine Vasile (associated with Waterfilm Energy, Inc., and co-inventor of U.S. Patent No. 4,619,311 which covers GFX

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technology) as noted by the "Cc: Carmine, Vasile (E-mail) <gfx-ch@msn.com>" on the email of Exhibit C.

6. Further, I had various communications with Carmine Vasile regarding the use of a GFX type heat exchanger in a system as described in the pending claims of the above-identified application. Although copies of e-mails are not available due to a computer crash, a history of e-mails was recovered and still available. The history is provided as Exhibit D. The email that was about the time I mentioned such use to him is highlighted on the history. It is an e-mail in response to a lead for a project concerning "Telemark Resort" dated "8/26/2002."

7. Following the discussions and as evidenced by Exhibits E-1 through E-3, I noticed that the claimed invention had been copied by Waterfilm Energy, Inc. with whom Carmine Vasile is associated and to whom I had described the present invention. As evidence of such copying, attached are Exhibit E-1 which shows the archived gfxtechnology.com web sites, including the dates of when the site was updated. As shown by the archived Apr 25, 2003 site, which pertinent parts are partially included herein as Exhibit E-2, the present invention had not yet been copied. Rather, the web site showed only use of the GFX heat exchanger for waste water applications. However, as shown by the archived Jul 18, 2003 site, which pertinent parts are partially included herein as Exhibit E-3, the present invention as recited in at least the pending independent claims was clearly shown. For example, such claims are shown by the link entitled "Geothermal Applications Include Increasing Safety of "Water+" HVAC System" on page one of the Exhibit E-3 which provides a link to the last two pages of the Exhibit E-3. The last page of Exhibit E-3 shows a GFX type heat exchanger inserted into a city water main as described on the web site in the same manner as recited in the pending independent claims.

8. For years prior to my invention, according to my knowledge, the only heat exchanger contemplated for use in water mains were heat exchangers that removed water from the water

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main, processed or otherwise manipulated that water for heat exchange, and then returned the water to the main. Not until my present invention (i.e., well over 10 years after the GFX Patent No. 4,619,311 issued in 1986), and disclosure of same to personnel associated with the GFX patent, did Waterfilm Energy, Inc. with whom Carmine Vasile is associated, design a system where a GFX type heat exchanger is used in a city water main.

9. The evidence of copying above is evidence that the present invention is not obvious, even to those of one skilled in the art (e.g., Carmine Vasile and those associated with GFX technology), who themselves had extensive knowledge of heat exchanger technology. Only after my disclosure to them did they recognize the advantages and potential of the claimed invention, leading to the copying of my invention.

Declaration

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature

Full Name

Terrance E. Janssen

Signature

Date

12/6/06

Country of Citizenship

USA

Residence

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Post Office Address

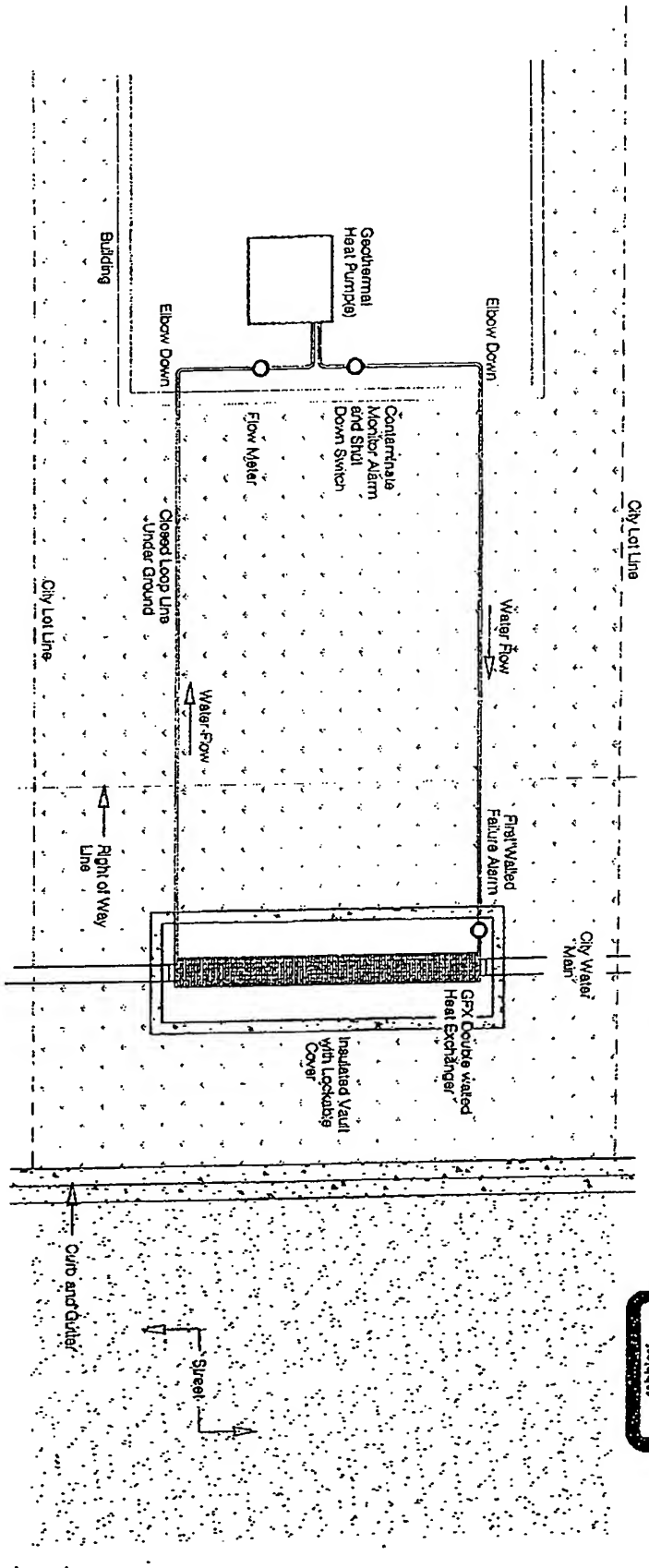
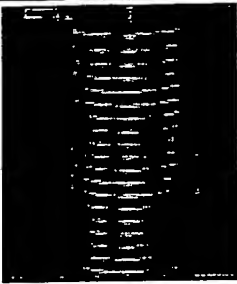
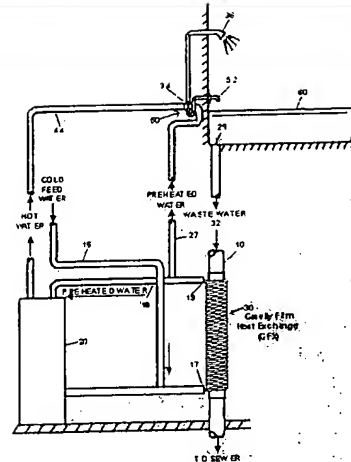
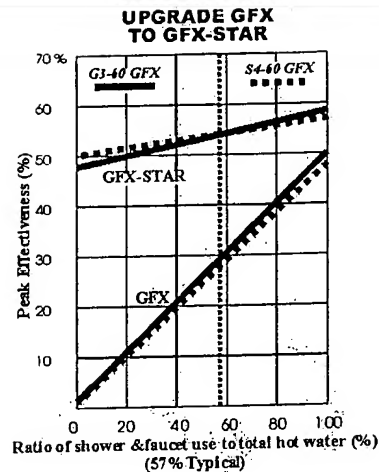
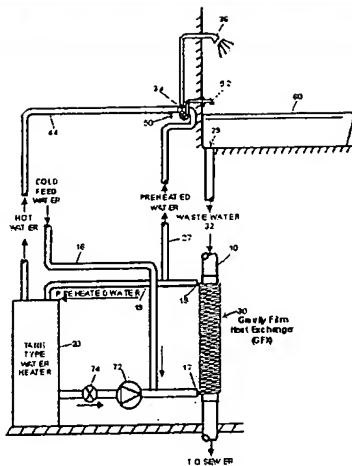


EXHIBIT  
A



# GFX™ Heat-Xchanger & Water Heater Booster



**GFX-STAR™**  
Active system for baths,  
dishwashers and other  
batch-flow uses

*GFX-STAR Saves Energy  
Conventional  
DHR Systems Miss\**

**GFX™**  
Passive system for  
showers and other  
continuous-flow uses

Buy Online   Internet Specials   Dealer Discounts  
Models & Prices   Technical Information   Dealer Password  
Testimonials   Commonly Asked Questions   Installation Video  
GFX Featured in Rocky Mountain Institute (RMI) Home Energy Brief #5 "Water Heating"  
Compares Savings of Electric, Gas, Geothermal, Heat Pump & Solar Water Heaters  
Solar and Efficient Water Heating: 2005 DOE Roadmap Adds Drainwater Heat Recovery  
"Zero-Energy" Homes by Hurst Construction

Contact Us

Manufacturer's Brochure

Patent Pending, U.S Patent #4,619,311 -- Coils & Tubes Conform to  
ASTM B88 & B306 Specifications  
Approved for use in Canada with potable water according to  
UL File #SA8583 a/k/a MH26850, MH29466 & E173200

\* *Improving the Efficiency of Drainwater Heat Recovery [DHR], Energy Design Update, Dec. 2005*

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*Exhibit B*

# United States Patent [19]

Vasile et al.

[11] Patent Number: 4,619,311

[45] Date of Patent: Oct. 28, 1986

[54] EQUAL VOLUME, CONTRAFLOW HEAT EXCHANGER

[76] Inventors: Carmine F. Vasile; Sheila F. Vasile,  
both of 4 Cordwainer La.,  
Huntington, N.Y. 11743

[21] Appl. No.: 749,662

[22] Filed: Jun. 28, 1985

[51] Int. Cl.<sup>4</sup> ..... F24H 3/00

[52] U.S. Cl. .... 165/47; 165/909;  
165/914

[58] Field of Search ..... 165/47 BW, DIG. 12,  
165/174, 154, 909, 914; 126/362; 4/598; 237/19

[56] References Cited

## U.S. PATENT DOCUMENTS

4,341,263 7/1982 Arabian ..... 165/47 X  
4,352,391 10/1982 Jonsson ..... 165/47 X

## FOREIGN PATENT DOCUMENTS

3011111 10/1981 Fed. Rep. of Germany ..... 165/47

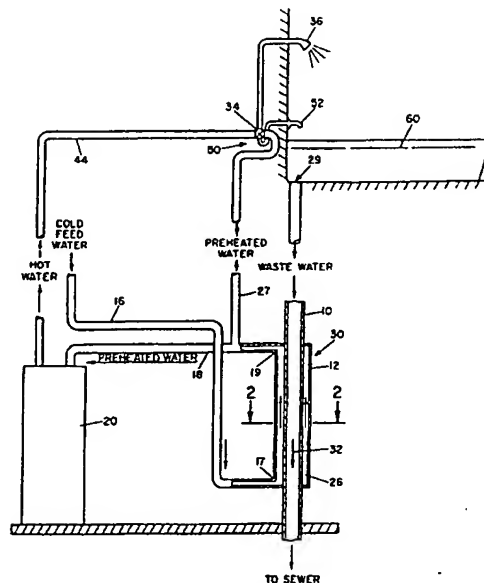
Primary Examiner—Henry Bennett  
Attorney, Agent, or Firm—F. R. Agovino

## [57] ABSTRACT

A system for recovery systems improving heat recovery from hot waste water is provided whereby cold feed water is preheated by means of extracting heat from hot waste water by passing said hot waste water and said cold feed water through a heat exchanger. Said preheated feed water is directed simultaneously to the hot water heater and to mixing valves at the point of usage of tepid water. Equal volumes of waste water and cold feed water flow through the system.

4 Claims, 2 Drawing Figures

Exhibit B



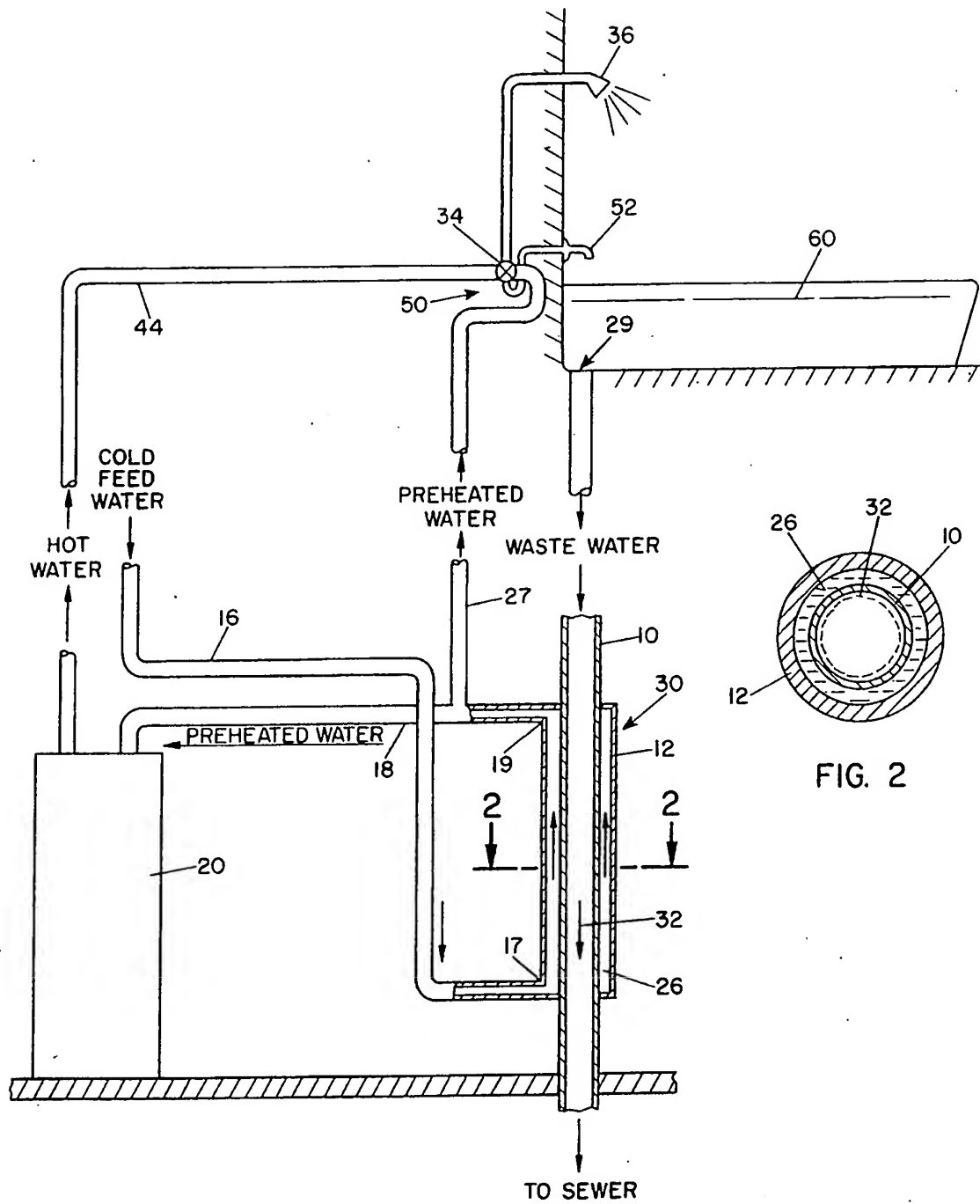


FIG. 1

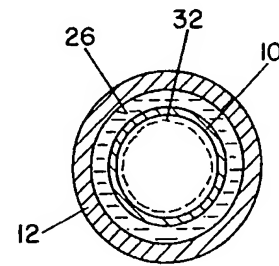


FIG. 2



## EQUAL VOLUME, CONTRAFLOW HEAT EXCHANGER

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The instant invention relates to a system for improving heat energy recovery from waste hot water whereby cold feedwater is preheated and then further heated and stored in a hot waterheater. Simultaneously, the system also provides for the preheated cold feed water to be mixed with hot water for direct use as tepid water.

The system further provides for multiple user operation at little additional expense and does not require additional storage or buffer tanks or other complex accessories.

#### 2. Description of the Prior Art

The prior art is exemplified by many examples of heat reclamation systems, most of which are expensive, complicated and require periodic cleaning and maintenance in order to avoid fouling and/or degradation of heat recovery efficiency; examples of which are shown in U.S. Pat. Nos. 4,304,292; 4,300,247; 4,150,787; 4,352,391 and 4,372,372. However, as will be seen herein, there are no existing systems that are as simple, versatile and inexpensive as the instant invention.

### SUMMARY OF THE INVENTION

In the present invention, the disadvantages of the prior art are overcome by using a relatively simple heat exchanger configuration having a sufficiently large inside diameter and proper orientation such that waste water is discouraged from filling said heat exchanger, but is instead encouraged to flow rapidly through said heat exchanger in the form of a film providing self-cleaning, non-fouling, maintenance-free operation.

Although said waste water spends a short period of time in transversing said heat exchanger, significant waste heat energy can be recovered by clever design which benefits from a combination of natural forces due to the earth's gravity and rotation which cause the waste water to spread out in a relatively thin sheet, against the inner wall of said heat exchanger, where, said waste water can be placed into thermal contact with cooler water destined for use as water heater feed-water and/or the production of tepid water by mixing with hot water, for example, as in showering.

The use of said heat exchanger in this manner is inventive because we teach herein that said heat exchanger must not be filled with waste water whereas prior art teaches that the heat exchanger must be filled with waste water. This allows the waste water to flow as a film. Furthermore, said heat exchanger provides an equal volume and opposite counterflow design which is simple, whereas prior art heat exchanger designs are more complicated as they often include means for cleaning and maintaining.

Finally, due to the simplicity of said heat exchanger design, sewage and the like can pass through, whereas prior art heat exchangers will likely foul if sewage were to enter the waste water inlet.

Thus, the non-fouling property of the present invention enables said heat exchanger to be inserted directly into a main waste water line and thereby efficiently recover waste heat produced by multiple sources, lo-

cated for example, at various places in a multi-family dwelling, or the like.

### DESCRIPTION OF THE DRAWING

FIG. 1 of the drawing shows a system whereby cold feed water is preheated in a heat exchanger and is then further heated and stored in a conventional hot water heater. The same heat exchanger is used via pipe 27 to reduce the quantity of hot water required in preparing a tepid water mixture for direct use as in showering, for example.

FIG. 2 of the drawing is a cross section along lines 2—2 and shows the cross section of a typical heat exchanger according to the invention.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

The prior art includes many techniques for the recovery of heat energy contained in waste water. As disclosed, for example, in U.S. Pat. Nos. 4,304,292; 4,300,247; 4,321,798; 4,150,787; 4,352,391 and 4,372,372, water used for showering, as well as other purposes, and discharged through drain lines can be placed into a heat exchange relationship with colder feed water in order to preheat either water heater feed water and/or cold water prior to mixing with hot water to provide tepid water for direct use. (See also A.A. Field, Heating/Piping/Air Conditioning, Volume 48, No. 3, pp. 87-91, "Solar Energy: Part II, The Continent," March 1976.)

Said heat exchange relationship conserves energy by lowering the temperature of said waste water by transferring heat energy to said feed water, or said cold water, or both, thereby reducing primary hot water heater input energy requirements and the quantity of hot water used in showering, for example. The present invention is directed at installations whereby tepid water is produced by mixing hot and cold water in a mixing valve 34, for example.

Referring to FIGS. 1 and 2 of the drawing, cold feed water enters the system through cold water pipe 16 which is connected to heat exchanger 30 at inlet 17 and exits heat exchanger 30 as preheated feed water at outlet 19 which is communicated to hot water heater 20 by pipe 18 where said preheated feed water is further heated and stored for domestic hot water requirements. Waste water pipe 10 is provided to take the waste water from bathtubs, sinks, showers, hot industrial equipments and etc., and communicate same to the sewer.

The inventive feature illustrated in FIG. 1 is the use of a substantially vertically oriented heat exchanger 30, that is inserted directly into a common drain conduit 10. Exchanger 30 pre-heats a volume of feed water 18 and cold water 27 equal to the waste water volume from drain 29 of tub 60 prior to mixing 50 with hot water 44 in valve 34, having shower outlet 36 and bath outlet 52, for example. Jönsson (U.S. Pat. No. 4,352,391) teaches usage of a more complicated heat exchanger without equal volume flow.

Jönsson and others, however, fail to teach the significance of preheating both feed water 18 and cold water 27 prior to mixing 27 so that equal volumes of cold and waste water are flowing through the exchanger at the same rate. For example, if 1.5 gpm of cold water 50 were mixed with 1.5 gpm of hot water 44, 3.0 gpm would flow as waste water 32 at a temperature equal to the average of the premixed two water temperatures. If, as Jönsson or Hunter (U.S. Pat. No. 4,372,372) teaches,

one installed an optimized heat exchanger having an effectiveness of 80%, for example, the best one can extract is about 40% of the waste water heat energy. This is because, in accordance with the laws of thermodynamics, the volume of the waste water is twice that of the cold water to which it is transferring heat.

The present invention, however, teaches a method for causing equal volumes of waste water 32 and cold feed water 16 to exchange heat energy. Thus, in the present invention, a similar 80%, not 40%, of the heat energy is extracted from in the waste water. This is the essence of the present invention. Buffer storage tanks are therefore not required in order to achieve cost effective waste heat recovery.

The system according to the invention will operate most efficiently if heat exchanger 30 is mounted with a substantially vertical orientation with waste hot water 32 in waste water pipe 10 spiraling around the inner metal walls of said pipe as indicated in FIG. 2. Sense of pitch should be in such a direction as to enhance natural spiraling due to Coriolis effect (e.g. in Northern Hemisphere clockwise when viewed downward.) In installations where vertical mounting is not possible, such as in homes without basements, a pump system together with flow control valves would then be required to raise the waste water up to the level of the heat exchanger input for the purpose of achieving useful heat recovery efficiency and ensure self-cleaning, non-fouling, maintenance-free operation of the heat exchanger. In many installations, waste water 32, for example, will have gained sufficient speed and centrifugal force due to gravity and the earth's rotation to produce efficient heat exchange.

As shown in FIGS. 1 and 2, co-axial contraflow heat exchanger 30 is provided and comprises an inner waste pipe 10 that carries waste water from the sources such as the bathtubs, shower stalls and sinks to the sewer for disposal. The heat exchanger design may be of various types. As shown in FIG. 2, waste pipe 10 is surrounded by a jacket of cold feed water 26 which in turn is contained by outer pipe 12. The waste hot water 32 in waste pipe 10 and cold feed water 26 flow in opposite directions to one another. This contraflow yields a more efficient heat exchange between the hot waste water and cold feed water than codirected flow.

The materials of construction may be of various types such as copper and aluminum for waste pipe 10 and cold water pipe 46 and for outer pipe 12 material such as PVC may be used although other materials may be substituted. Teflon coating on the inside wall of pipe 10 may be helpful in minimizing efficiency losses due to sewage fouling of its inner surfaces. Preferably, drain 29 has a smaller diameter than the diameter of waste pipe 10 so that waste water 32, flowing downward, is encouraged to form a film about the inner surface of inner cylindrical pipe 10. This also prevents waste water 32 from filling pipe 10.

Two or more heat exchangers may be used in tandem to increase the efficiency of heat transfer.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is understood that the invention is not limited to this precise form of apparatus and that changes may be made therein without departing from the scope of this invention.

What is claimed is:

1. An apparatus for use in combination with a water heating system wherein the system includes

- (1) a cold water feed;
- (2) a water heater having an inlet connected to the cold water feed and a hot water outlet, and
- (3) a facility connected to the cold water feed and the hot water outlet and having a waste pipe for carrying mixed hot and cold water, the facility having a means for mixing the cold and hot water and immediately providing the mixed water to the waste pipe;

said apparatus comprising:

- (a) first means including a cylindrical member connected to the waste pipe for directing the flow of the mixed hot and cold water in the form of a film spiraling downward over the inner surface of the cylindrical member; and
- (b) second means connected in-line with the cold water feed prior to the cold water feed connections to the facility and prior to the cold water feed connections to the water heater for directing the flow of cold water flowing in the cold water feed upward in contact with the outer surface of the cylindrical member, said second means directing the cold water flowing in contact with the outer surface of the cylindrical member in a direction opposite to the direction of flow of the mixed hot and cold water flowing in contact with the inner surface of the cylindrical member whereby the volume of water flowing through the first means is equal to the volume of the water flowing through the second means.

2. The apparatus of claim 1 wherein said first means is a vertical pipe and said second means is a jacket surrounding the vertical pipe.

3. An apparatus for transferring heat to a first fluid supplied by a cold water feed pipe which supplies cold water to a hot water heater, said heat being supplied from a waste water supply from a facility resulting from the mixing of water from the cold water feed and heated water from the hot water heater, said apparatus comprising:

a vertical pipe connected to the first source pipe and having a diameter greater than the diameter of the first source pipe, the vertical pipe directing the flow of the first fluid in the form of a film spiraling downward over the inner surface of the vertical pipe;

a jacket surrounding the vertical pipe and connected to the second source, the jacket having an inlet and an outlet and directing the flow of the second fluid upward over the outer surface of the vertical pipe; and

means for controlling the volume of the second fluid flowing through the jacket so that the flow rate of the second fluid flowing through the jacket equals the flow rate of the first fluid flowing through the vertical pipe; wherein said means for controlling is:

a first pipe interconnecting the waste water supply and the vertical pipe;

a second pipe connecting the jacket inlet to the cold water feed supply prior to supplying cold water to the hot water heater and prior to supplying cold water to the facility; and

a third pipe connecting the jacket outlet to the hot water heater and to the facility, the third pipe for supplying cold water to the hot water heater and to the facility.

4. The apparatus of claim 3 wherein the second fluid is a cold water feed which supplies cold water to a hot

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water heater and the first fluid is a waste water supply from a facility resulting from the mixing of water from the cold water feed and heated water from the hot water heater; and wherein said means for controlling is:  
a first pipe interconnecting the waste water supply and the vertical pipe,  
a second pipe connecting the jacket inlet to the cold water feed supply prior to supplying cold water to

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the hot water heater and prior to supplying cold water to the facility; and  
a third pipe connecting the jacket outlet to the hot water heater and to the facility, the third pipe for supplying cold water to the hot water heater and to the facility.

\* \* \* \* \*

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**Terry Janssen**

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**From:** John Lebo <JohnL@doucetteindustries.com>  
**To:** Terry E. Janssen (E-mail) <tjanssen@northamericanenergyco.com>  
**Cc:** Carmine Vasile (E-mail) <gfx-ch@msn.com>  
**Sent:** Friday, June 28, 2002 3:02 PM  
**Subject:** Our Q-12658

Terry,

Per your 6/26/02 phone request, we quote the following two models for your consideration to be used in conjunction with geothermal heat pumps.

The "drain" pipe is made of Type L hard copper tubing. Type L is what's used in homes.

The water flow rate in the main is given for reference because that's what it balances out to be.

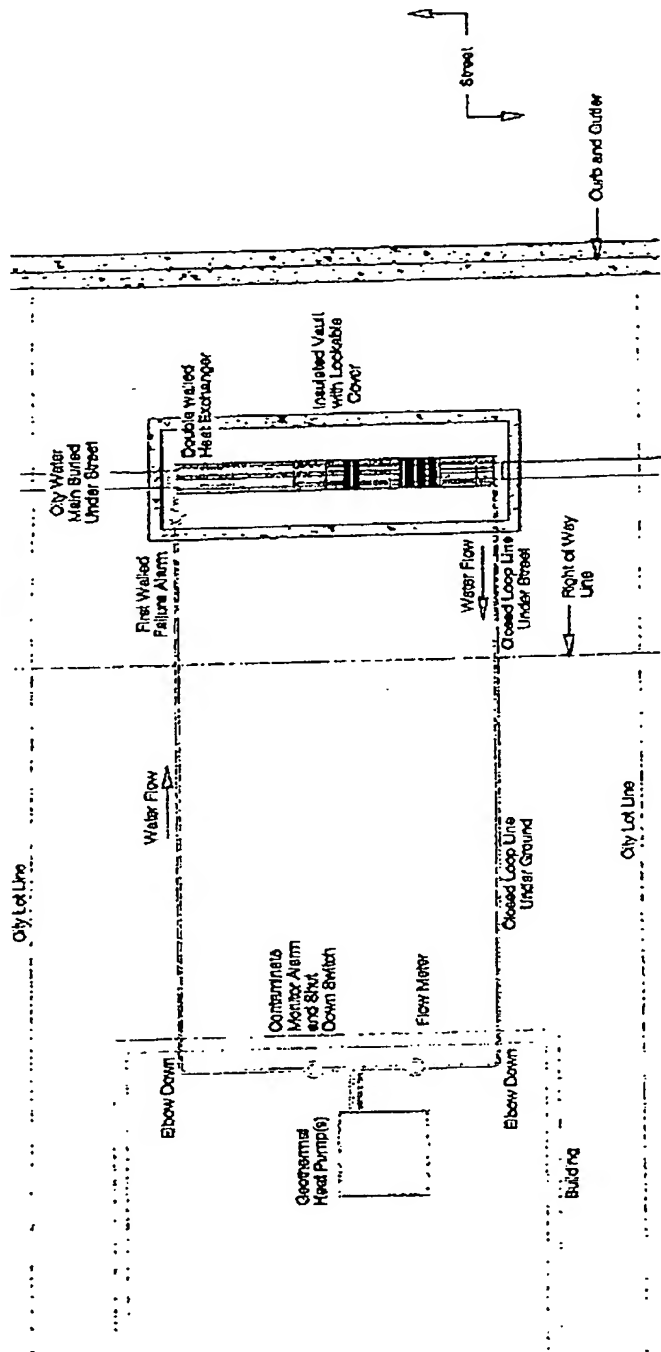
Loop GPM is based on a 10F split. Please advise with any questions. JohnL

A. Model: G6-60-3 (6 x 1)  
GFX Vented Double Wall Heat Exchanger  
Perf: Cool 6.9 GPM of loop water from 80 to 70F, 5.1 psi PD  
using 34.3 GPM of main water from 54 to 56F  
Const: Type L hard large tube  
Type L light annealed coil tubing  
Manifolding Type L copper tubing  
Fittings - standard refrigeration quality  
Design: 150# DWP  
Conn: 6-1/8" OD main  
1-1/8" ID coil side manifold  
Price: \$ 1,700.00 List each  
Ship: 3-4 Weeks ARO  
Terms: FOB York, PA / Net 30

B. Model: G6-80-4 (6 x 1-1/4)  
GFX Vented Double Wall Heat Exchanger  
Perf: Cool 9.2 GPM of loop water from 80 to 70F, 5.2 psi PD  
using 46.2 GPM of main water from 54 to 56F  
Const: Type L hard large tube  
Type L light annealed coil tubing  
Manifolding Type L copper tubing  
Fittings - standard refrigeration quality  
Design: 150# DWP  
Conn: 6-1/8" OD main  
1-3/8" ID coil side manifold  
Price: \$ 2,250.00 List each  
Ship: 3-4 Weeks ARO



6/28/02



GLX (GEOTHERMAL LOOPLESS EXCHANGER)™  
PATENT PENDING

# Notes/History

Company WaterFilm Energy Inc  
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 Gen.Ph. [1] 631-758-6271  
 Home Phone  
 Car Phone  
 E-mail Address gfx-ch@msn.com

Ext.  
 Ext.

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 Palm Harbor, FL 34684  
 Address P.O. Box 128  
 Address 2  
 Address 3  
 City Medford  
 State NY  
 Home Address 2  
 ZIP Code 11763

Web Site www.oikos.com

Contact : WaterFilm Energy Inc			Carmine F. Vasile
E-mail Sent	2/3/2003	9:54 AM	Subject: Copy of response to lead
E-mail Sent	12/14/2002	7:07 PM	Subject: Follow Up
E-mail Sent	8/26/2002	5:32 PM	Subject: Telemark Resort
Call Completed	8/22/2002	5:30 AM	Laundromat design
Call Completed	8/21/2002	3:00 AM	Returning call
E-mail Sent	8/12/2002	7:07 PM	Subject: Window Display
E-mail Sent	8/12/2002	3:01 PM	Subject: Attachment to news article
E-mail Sent	8/9/2002	3:25 PM	Subject: Mills Fleet Farm
E-mail Sent	8/8/2002	6:46 AM	Subject: Lead From Michigan
E-mail Sent	8/6/2002	5:17 PM	Subject: Water Main Heat Exchanger
E-mail Sent	8/5/2002	4:54 PM	Subject: Teasdale GFX
E-mail Sent	8/5/2002	3:22 PM	Subject: Multi Housing News Ad
E-mail Sent	7/29/2002	5:27 PM	Subject: Multi housing news ad copy
E-mail Sent	7/25/2002	12:06 PM	Subject: Copy of E-mail to Don Clem
E-mail Sent	7/18/2002	3:40 PM	Subject: Energy Design Update
E-mail Sent	7/18/2002	2:33 PM	Subject: Milwaukee Idea House
E-mail Sent	7/18/2002	10:00 AM	Subject: E-mail to and from State of Minnesota
E-mail Sent	7/17/2002	6:15 PM	Subject: Solar Heat Exchanger
E-mail Sent	7/17/2002	5:43 PM	Subject: Heat Exchanger for Solar
E-mail Sent	7/17/2002	2:23 PM	Subject: Property Inspections for GFX
E-mail Sent	7/16/2002	10:58 AM	Subject: Delta Mechanical
E-mail Sent	7/11/2002	5:33 PM	Subject: Contact Info
E-mail Sent	7/11/2002	5:22 PM	Subject: Copy of response to CET e-mail
E-mail Sent	7/11/2002	5:12 PM	Subject: E-mail from Creative Energy Technology
E-mail Sent	7/11/2002	2:39 PM	Subject: Copy of E-mail to Henry
E-mail Sent	7/10/2002	1:27 PM	Subject: Advertising and promotion
E-mail Sent	7/10/2002	6:38 AM	Subject: Reply to Tom St. Louis
E-mail Sent	7/8/2002	6:09 PM	Subject: Copy of e-mail to GoodCents
E-mail Sent	7/8/2002	5:47 PM	Subject: copy of e-mail to Carsten Ginsburg
E-mail Sent	7/8/2002	2:38 PM	Subject: Marketing
E-mail Sent	7/5/2002	3:08 PM	Subject: Major Response
E-mail Sent	7/3/2002	1:51 PM	Subject: North American Web Site
E-mail Sent	7/3/2002	9:23 AM	Subject: Reponse received from Creative Technology
E-mail Sent	7/2/2002	5:44 PM	Subject: Copy of e-mail to Ecolab

Exhibit D

# Notes/History

T. E. "Terry" Janssen , My Record  
35246 US Hwy 19  
#316  
actionmgt@comcast.net  
Palm Harbor, FL 34684

E-mail Sent	7/2/2002	5:31 PM	Subject: Copy of e-mail to Todd Warner
E-mail Sent	7/2/2002	4:49 PM	Subject: E-mail to Jay McDonald
E-mail Sent	7/2/2002	4:42 PM	Subject: Update
E-mail Sent	7/2/2002	4:32 PM	Subject: Sales activity update
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E-mail Sent	5/29/2002	9:40 AM	Subject: Leads & Advertising
Call Completed	5/29/2002	8:07 AM	Review agreement
Field Changed	5/29/2002	7:29 AM	ID/Status - WFSHE-Suppliers Heat Exgr
Note	5/29/2002	7:21 AM	Dr. Carmine F. Vasile, President WaterFilm Energy Inc.; P.O. Box 128; Medford, NY 11763 USA Rep for Doucette Industries; Except: WA, OR, ID, MT, CA, NV, UT, WY, CO, AZ, NM, AK, HI Tel: 631-758-6271 Fax: 631-758-0438 Email: gfx-ch@msn.com Web: <a href="http://oikos.com/gfx/">http://oikos.com/gfx/</a>

Exhibit D

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125 Results

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 \* denotes when site was updated.

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1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
0	0	0	0	0	0	15 pages	28 pages	30 pages	32 pages	1
pages	pages	pages	pages	pages	pages					
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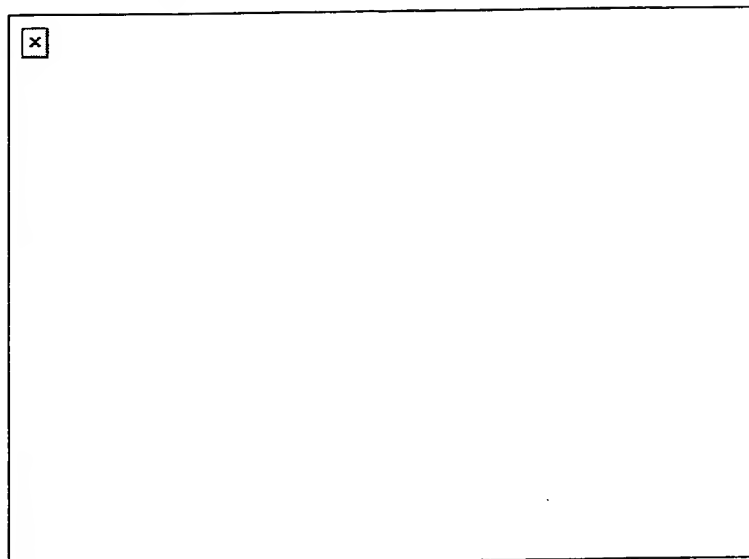
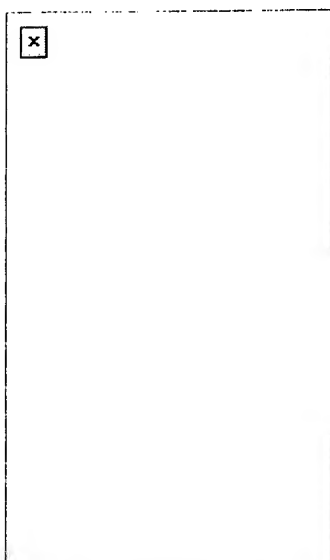
Exhibit E-1

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## Award-Winning GFX Technology



*Why waste energy  
down the drain?*

*When it's so easy to recycle!*

Sale: 50% Off All GFX Models

List Prices

Customer Testimonials

GFX Models:

Residential

Commercial & Industrial

Q&A

Shower Costs, S3-60 Photo & Installation Diagram

INDEX TO: Case Studies, Photos, Engineering Drawings, etc.

Out-Saves Every ENERGY STAR Appliance

Gives an Electric Water Heater the Capacity of a Gas Heater

Performance Rivals HPWH

Enhances Solar Water Heater Performance

Boosts Efficiency & Power Of Any Water Heating System

\$75 GFX-Rebate In Connecticut

Helps Save Water & Energy in Condos, Hotels, Dorms, etc.

Canadian R-2000/Energuide Energy-Credits: Electric 1760 kWh; Natural  
Gas 96 Therm = 9.9 MBtu = 2,815 kWh-thermal

Why America Should Follow Canada: A Trillion kWh Down-the-Drain



Exhibit E-2

COLD WATER  
SUPPLY AT 30 psi

POTABLE HOT  
WATER BOILER

**Problem:** Provide instant hot water in hi-rise buildings to fixtures located far from main recirc loops.

**Solution:** Install a thermostatically controlled circulator and a GFX on each floor to tap heat off the main recirc loop.

**Advantages:** Save water and energy, cut sewer charges and eliminate inline water heaters that waste electricity; with GFX protecting the main loop against cross-contamination.

ROOF

28th FL

27th FL

26th FL

25th FL

24th FL

23rd FL

22nd FL

21st FL

20th FL

30 psi PLUS 100' = 73 psi

PRV TO 55 psi TYP

19th FL

18th FL

17th FL

16th FL

15th FL

14th FL

13th FL

12th FL

11th FL

30 psi PLUS 190' = 112 psi

55 psi

Model  
G2-12  
GFX

APARTMENT INTERNAL  
RECIRC SYSTEM

FIXTURES

THERMOSTATICALLY  
CONTROLLED CIRCULATOR

9th FL

8th FL

7th FL

6th FL

5th FL

4th FL

3rd FL

2nd FL

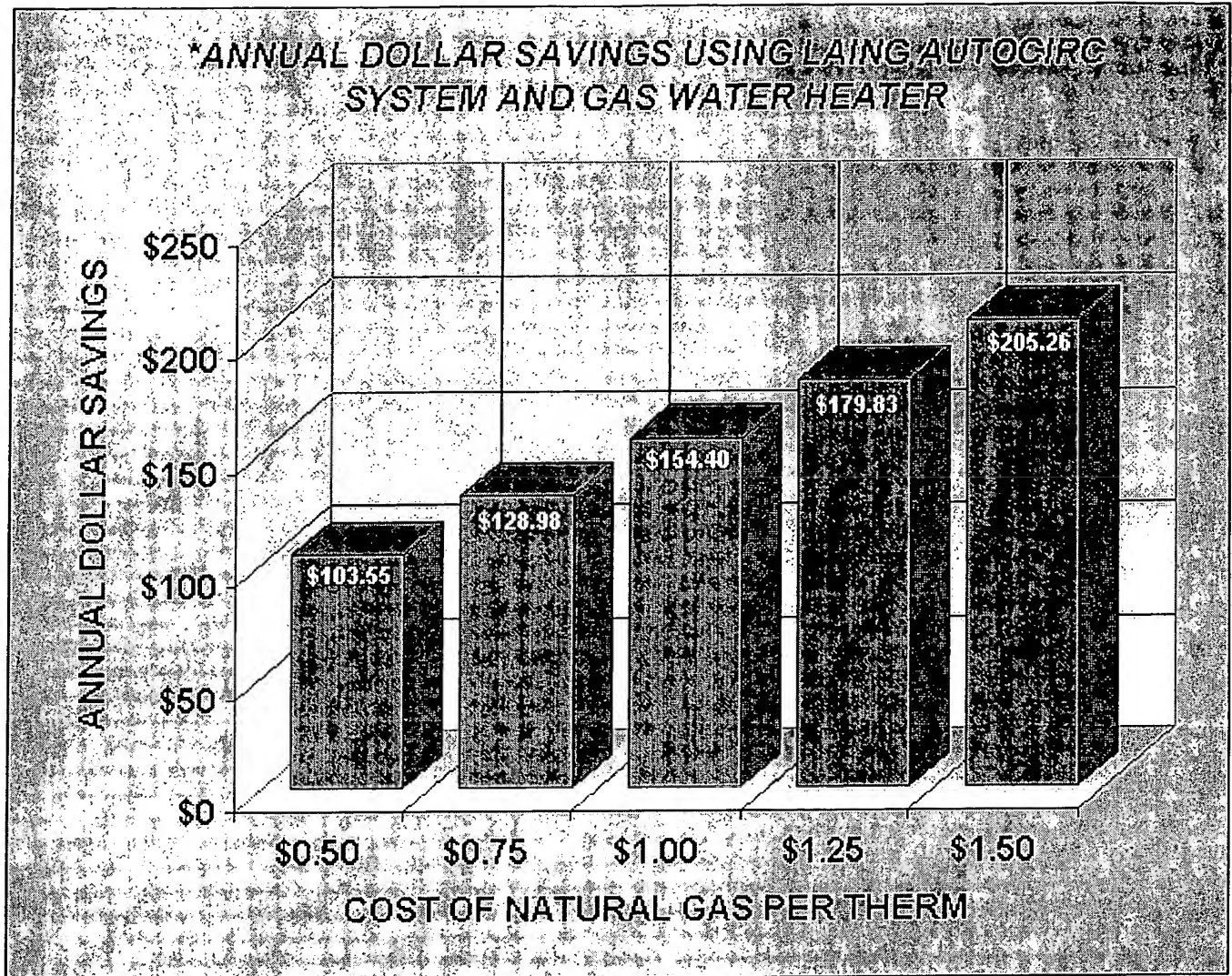
1st FL

SMALL RECIRC PUMP

Exhibit E-2

© 2002 Waterfilm Energy, Inc.

Exhibit E-2

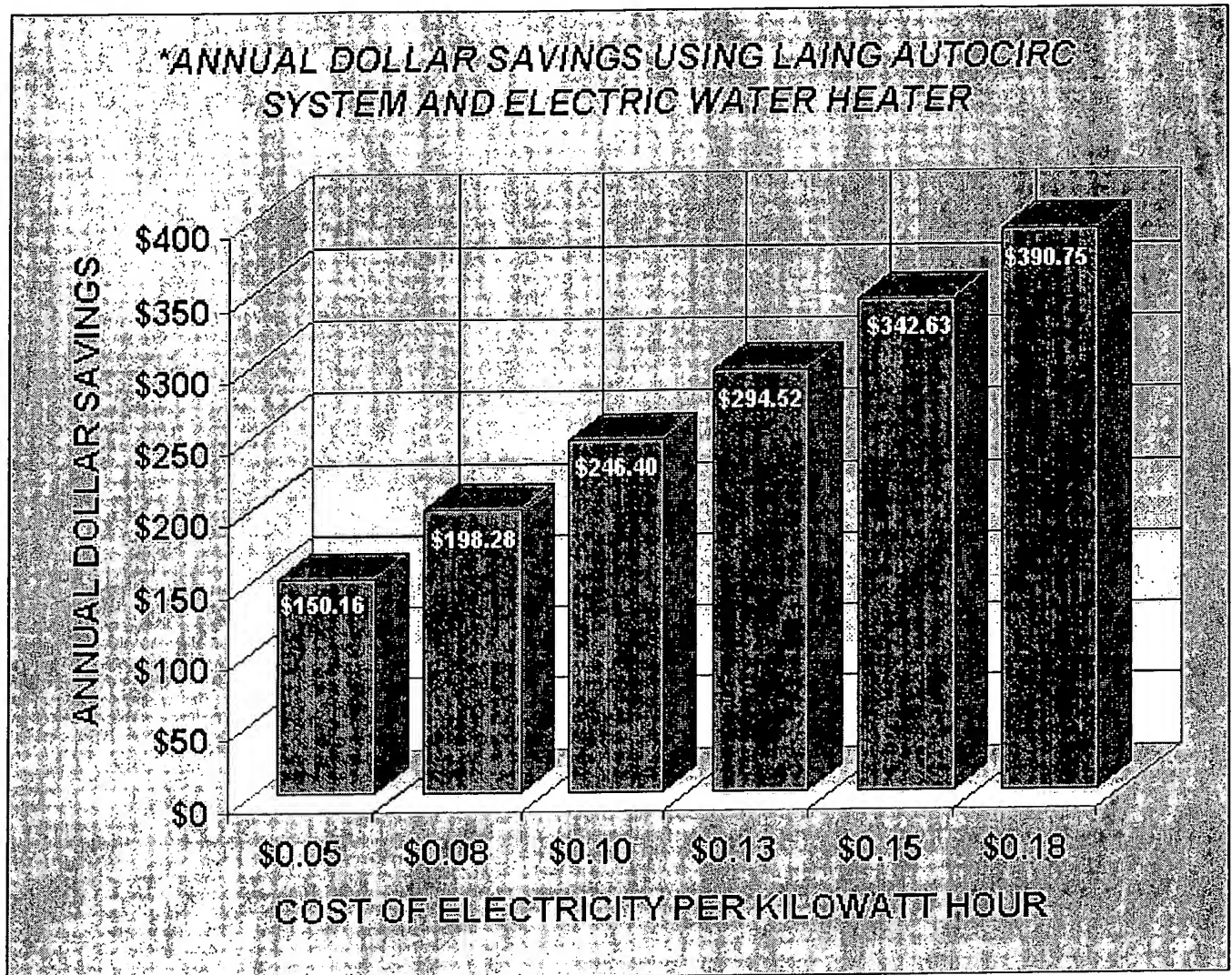


**Chart Calculation Factors For Gas Water Heater:**

1. Savings of 34.2 gal./day of previously heated water wasted from discharging down drain. (350 days/yr. = 11,970 gal./yr.)
2. Water heater is set at an average temperature of 140°F, has an efficiency rating of 65%, and a heat rise temperature value of 100°F.
3. The incoming water temperature is 40°F.
4. Gas cost per therm includes taxes and charges.
5. Gas savings in therms result from not having to heat wasted water less the gas used to offset piping heat losses. (101.71 therms/yr.)
6. Additional piping heat losses are based on 10 BTU/hr./ft. in 60 feet of ¾" uninsulated hot water supply piping.
7. Water cost is based on \$2.02/100 cu. ft. and sewer surcharge cost is based on \$1.35/100 ft.³. (Total water cost savings = \$53.79/yr.)
8. Cost to run pump = \$1.24/yr. (Based on \$0.10/kWh, pump running 4 min./hr., 16 hrs./day, and 350 days/yr.)
9. Numbers are rounded off.

Exhibit E-2

## Autocirc Savings Using an Electric Water Heater



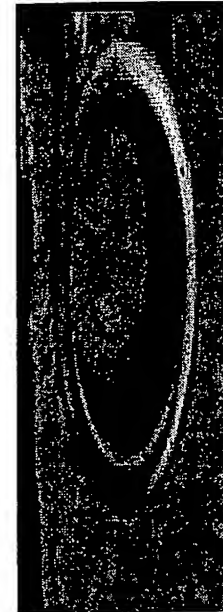
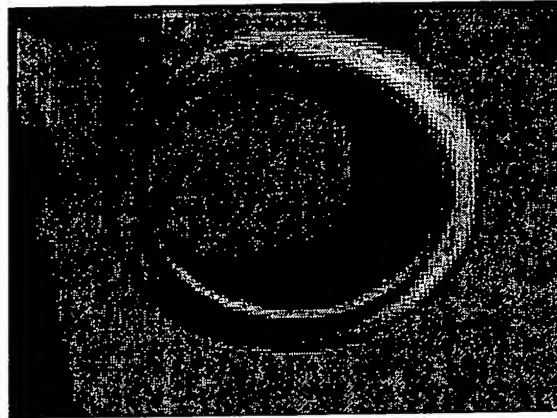
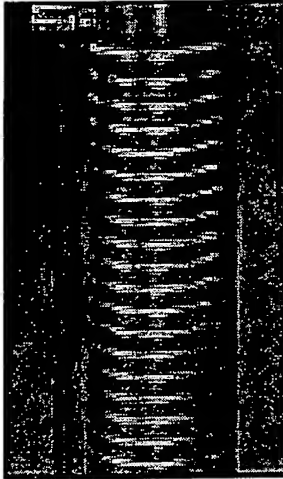
### Chart Calculation Factors For Electric Water Heater:

1. Savings of 34.2 gal./day of previously heated water wasted from discharging down drain. (350 days/yr. = 11,970 gal./yr.)
2. Water heater is set at an average temperature of 140°F, has an efficiency rating of 100%, and a heat rise temperature value of 100°F.
3. The incoming water temperature is 40°F.
4. Electrical energy savings in kWh result from not having to heat wasted water less the energy used to offset piping heat losses. (1,924.69 kWh)
5. Cost per kWh includes taxes and charges.
6. Additional piping heat losses are based on 10 BTU/hr./ft. in 60 feet of 3/4" uninsulated hot water supply piping.
7. Water cost is based on \$2.02/100 cu. ft. and sewer surcharge cost is based on \$1.35/100 ft.3. (Total water cost savings = \$53.79/yr.)
8. Cost to run pump = \$1.24/yr. (Based on \$0.10/kWh, pump running 4 min./hr., 16 hrs./day, and 350 days/yr.)
9. Numbers are rounded off.

Exhibit E-Z

**GFX**technology.com

## Award-Winning GFX Water Heater Booster



When it's so easy to recycle!

Why waste energy  
down-the-drain?

S3-60 GFX in Bob Vila's  
Habitat for Humanity Blitz Build -->

**SALE: 40% Off & FREE S/H Specials** List Prices Customer Testimonials

**GFX Models:** Residential Commercial & Industrial Q&A

Product Description, Case Studies, Photos, Engineering Drawings, etc.

Shower Costs, S3-60 Photo & Installation Diagram

DHR Technology is Recommended by PATH

Gives an Electric Water Heater the Capacity of a Gas Heater

Out-Saves Every ENERGY STAR Appliance Performance Rivals HPWH

Enhances Solar Water Heater Performance

Boosts Efficiency & Power Of Any Water Heating System

Water-Saving Instant Hot Water Systems in Condos, Hotels, Dorms, etc.

Geothermal Applications Include Increasing Safety of "Water+" HVAC System

In Oregon "hot water usage is the single biggest energy cost in an apartment"

Canadian R-2000/Energuide Energy-Credits: Electric 1760 kWh; Natural Gas 96  
Therm = 9.9 MBtu = 2,815 kWh-thermal

Why America Should Follow Canada: A Trillion kWh Down-the-Drain

Buy Online @ The GFX Outlet Store

Contact Us

Exhibit E-3

**BEST AVAILABLE COPY**



## Water+® Geothermal HVAC Systems

**Water+** is an alternative energy system that dramatically lowers energy bills while helping protect the environment. An "exciting" innovation in geothermal technology, **Water+**, uses a city utility's water main as an earth loop to transport thermal energy stored in the ground to geothermal heat pumps within a home or commercial building. (See [www.waterplus.com/](http://www.waterplus.com/) & the following Q&A's below from [www.waterplus.com/faq.html](http://www.waterplus.com/faq.html))

### Problems Affecting Public Safety

**Q: Is there a need for double wall heat exchanger?**

**A:** We do not recommend double wall heat exchangers to be used in conjunction with the water+ system. The only installations currently using double wall heat exchanges are the direct return systems. **They reduce operating efficiency enough to put added load on the water plant.** It is an option but should be a last resort due to the increased cost and reduced efficiency.

**Q: What happens if the heat exchanger is breached?**

**A:** A typical water+ system has two completely separate loops: the municipal water loop and the building loop. **Ninety-nine percent of the time** if a heat exchanger fails, both fluids would leak to the floor, indicating the need for repair. In the extremely rare event of a breach, the building loop is designed to run at a much lower operating pressure than the municipal water loop. The breach would cause the building loop to over pressurize. A pressure relief valve would immediately open allowing the building loop water to dump down the sanitary sewer and once again indicating the need for repair. The heat exchangers used in this system are designed to handle over 400 PSI. Most water systems operate at much lower pressures, 40-70 PSI. It is conceivable that several ounces of mineral oil could get into the water stream. In addition, there can be some freon entry. The mineral oil is of low volume, while not certified as food grade, it is **relatively safe**. The freon is one of advanced materials and will outgas leaving no residue.

### *WaterFilm Energy's Innovative Solution Eliminates Need to Compromise Public Safety*

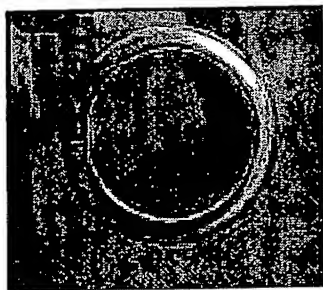


Figure 1. S3-60 GFX

A self-vented, double wall GFX will protect against even a "**relatively safe**" threat to Public Safety 100% **"of the time"**; without reducing "**operating efficiency enough to put added load on the water plant.**" Figure 1 shows why. Since a GFX's central tube wall is smooth, if its I.D. is matched to a water main's at the point-of-use, there's nothing to restrict flow. Therefore, a water plant will see no increase in back pressure, even if many GFX's were to be inserted into a single main; be it a water main, sewer main or hot water recirc-loop.

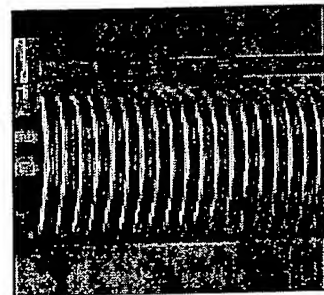


Figure 2. S3-60 GFX

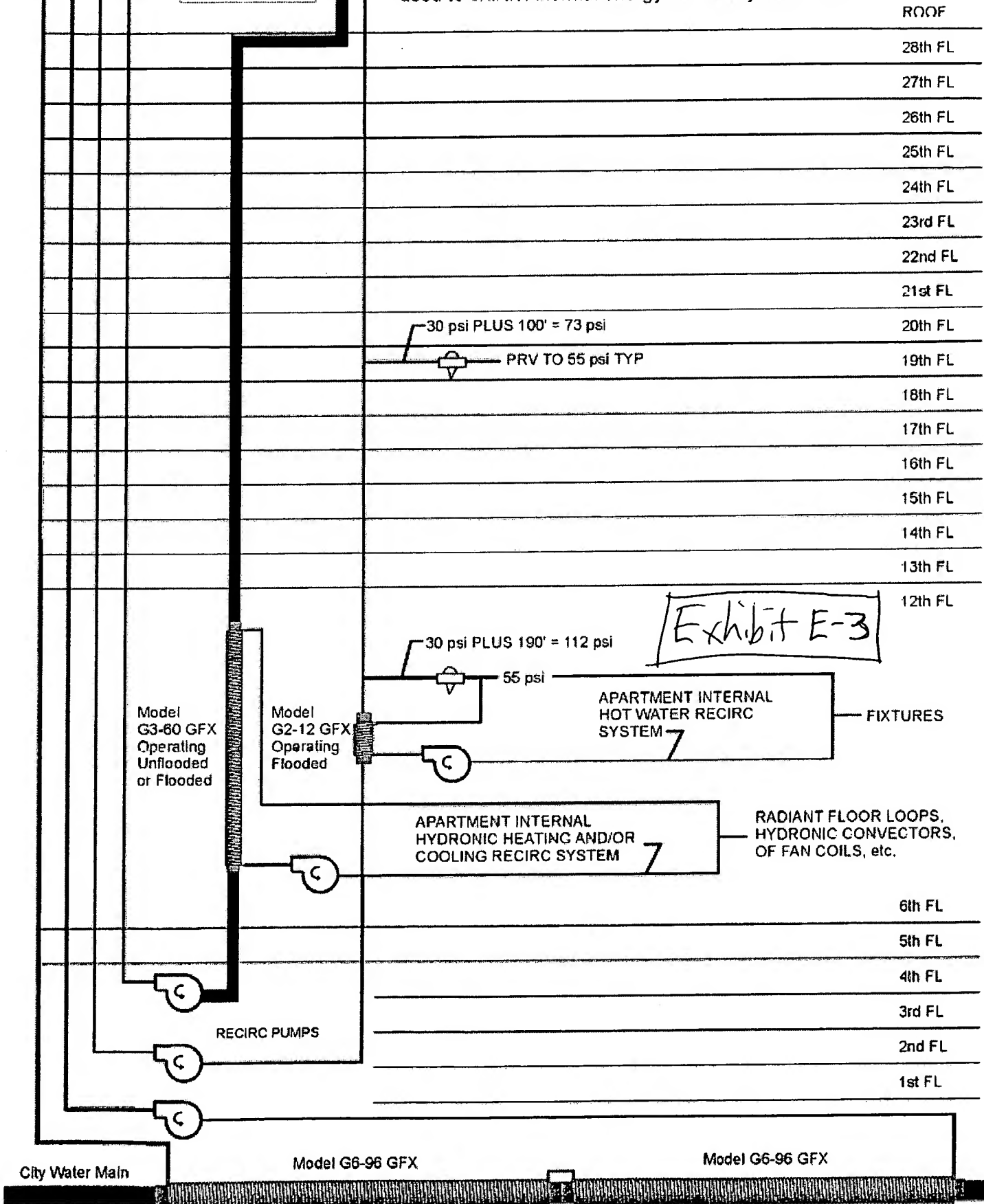
Exhibit E-3

COLD WATER  
SUPPLY AT 30 psi

POTABLE HOT  
WATER & HVAC  
GEOTHERMAL  
SYSTEM

## Combined Space & Water Heating

Model G2-12, G3-60 & G6-96 GFX's can provide space heating/cooling & instant hot water while conserving water & energy wasted in conventional recirc loops having inline heaters --- with a Geothermal Heat Pump used to extract thermal energy from a city water main



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